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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/186,817	11/05/1998	MARK RAPAICH	450.183US1	2299

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EXAMINER

LAO, LUN S

ART UNIT	PAPER NUMBER
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2644

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/186,817

Applicant(s)

RAPACH, MARK

Examiner

Lun-See Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This action is response to the amendment filed on 06-30-2005. Claims 14-16 have been added and claims 1-16 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 16 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the original specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The original specification fails to disclose a computer speaker configured to receive analog signals converted from the digital audio signals by the selected digital-to-analog converter as recited in claim 16.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3, 5-6, 8-9 and 11,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (US PAT 5,592,508) in view of Thagard et al. (US PAT. 6,215,737).

Regarding claim 1, Cooper teaches that a system comprising:

a plurality of audio digital-to-analog converters (see fig.4, (10-1-10-n)),

A controller (see fig.4, 17) configured to receive digital audio signals from multiple sources and route (see fig.4, 16) the digital audio signals to a selected digital-to-analog converter (10-1,10-n) based on desired converter quality (route to a converter matching the appropriate/particular signal, col.4 line 55-col.5 line 55), but Cooper does not clearly teach the audio signals relate to difference quality digital to analog converters.

However, Thagard teaches the audio signals (such as 12khz (subw) 48 khz (r.l, rr) and 96khz(fc, fr) relate to difference quality digital to analog converter (such as subw d/a, rl d/a, rr d/a, fl d/a, fc d/a and fr d/a see figs 3-4 by difference frequency and col.3 line 34-col.4 line 34 and selected digital to analog converter base on desired converter quality).

Therefore, it would been have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Thagard into Cooper to provide a

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multi-channel digital audio having different sampling rate for different d/a converter in order to avoid more data than is necessary and consequently to conserve space on the software carrier to enhance audio reproduction quality.

Regarding claims 2, 13, Cooper teaches a system comprising:

one or more standard digital audio sources (see fig.4, (13-1-13-n));

means for routing (16) digital audio signals from standard digital audio sources to a standard quality digital-to-analog converter (see fig.4, (10-1-10-n); and

means for routing (16) digital audio signals from a high-quality digital audio source to a high quality digital-to-analog converter (see fig.4, (10-1-10-n) and col.4 line 50 - col.5 line 55) (different types of input signals, col. 1, lines 9-13). Note discussion of claim 1 for quality of converters.

Regarding claim 3, Cooper discloses that the system includes any of the high quality or standard quality digital-to-analog converters are coder-decoders (CODECs) that contain both digital-to-analog converters (see fig.4, (10-1-10-n)) and analog-to-digital converters (see fig.4, (13-1-13-n) and col.4 line 50- col.5 line 50).

Regarding claims 5-6, Cooper teaches that a user configures the controller by hardware or software controls, such that the controller routes a selected analog signal to a selected one of a plurality of analog outputs (see fig.4 and col.4 line 5- col.5 line 15), and that the selected analog signal is provided by one of a group consisting of the digital-to-analog converters, Compact Disc players, DVD players, microphones, TV tuners, or analog inputs (see col.3 lines 20-42).

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Regarding claim 8, Cooper teaches that the digital audio signal (see fig.4, (10-1-10-n)) is transferred from the digital audio source (13-1-13-n) to the controller (17) by a direct electrical or optical connection between the two.

Regarding claim 9, Cooper teaches that a method of routing digital audio to a plurality of digital-to-analog converters in a personal computer comprising the steps of:

receiving digital audio data from one of a plurality of digital audio sources (after a/d, (13-1-13-n)); and

routing (see fig.4, 16) the digital audio data to one of a plurality (see fig.4, 10-1-10-n)) of converters based on desired converter quality (route to a converter matching the appropriate/particular signal, col.4 line 55-col.5 line 55). Note discussion of claim 1 for based on desired converter quality.

Regarding claim 11, Cooper teaches that a method of routing digital audio to a plurality of audio digital-to-analog converters in a personal computer comprising the steps of:

receiving digital audio from one of a plurality of digital audio sources (see fig.4 (after a/d, 13-1-13-n));

assigning digital audio data from a source a priority (higher priority input, col.4 line 50-col.5 line 55); and

routing (16) the digital audio data to one of a plurality of converters (10-1-10-n) in an order determined by the assigned data priority (see fig.4 col.4 line 50-col.5 line 55).

It is noted that assigning a higher priority to one input effectively assigns relatively lower

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priorities to other inputs. Alternatively, it would have been obvious to explicitly assign one priority level to each input.

6. Claims 12 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heyl (US PAT 5,774,567) in view of Thagard (US PAT 6,215,737).

Regarding claim 12, Heyl teaches that a personal computer system comprising: memory (see fig.5, 202 buffer); a processor (such as a control circuitry); a bus (see fig.5 and col.6 line 8-col.7 line 19), a plurality of digital audio converters (see fig.5 214,215, 252, 254); a controller (such as control circuitry) configured to receive digital audio signals from multiple sources (see fig.5 and col.6 line 8-col.7 line 17), but Heyl does not clearly teach to route the digital audio signals to a selected digital-to-analog converter based on desired converter quality.

However, Thagard teaches the audio signals (such as 12khz (subw) 48 khz(r.l, rr) and 96khz(fc, fr) relate to difference quality digital to analog converter (such as subw d/a, rl d/a, rr d/a, fl d/a, fc d/a and fr d/a see figs 3-4 by difference frequency and col.3 line 34-col.4 line 34 and selected digital to analog converter base on desired converter quality).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Heyl into Thagard to provide a multi-channel digital audio having different sampling rate for different d/a converter in order to avoid more data than is necessary and consequently to conserve space on the software carrier to enhance audio reproduction quality.

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Regarding claim 16, Heyl teaches that a computer speaker (see fig.5, SPKR-OUT) configured to receive analog signals converted from the digital audio signals by the selected digital-to-analog converter (such as left D/A and right D/A and see col.8 line1-col. 9 line 12).

7. Claims 4,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (US PAT 5,592,508) as modified by Thagard (US PAT. 6,215,737) as applied to claims 1, 9 above and further in view of Van Ryzin (US PAT 6,052,471).

Regarding claims 4, 10, Cooper teaches that assigning digital audio data from each source a priority (higher priority input); assigning digital audio data from each source to one of the plurality of converters (see col.4 line 50-col.5 line 55). Cooper fails to teach that determining which digital audio data has the highest priority among all data assigned to each converter; and converting the digital audio data in each converter with the highest priority to analog audio.

However, Van Ryzin teaches that determining which digital audio data has the highest priority among all data assigned to each converter; and converting the digital audio data in each converter with the highest priority to analog audio (see col.3 line 60-col.4 line 65).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Van Ryzin into the teaching of Cooper and Thagard to achieve a system receiving inputs signals from multiple sources to be

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able to readily switch to an appropriate source of the multiple sources while requiring a minimum amount of user intervention.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (US PAT 5,592,508) as modified by Thagard (US PAT. 6,215,737) as applied to claims 1, 9 above and further in view of Heyl (US PAT 5,774,567).

Regarding claim 7, Cooper and Thagard does not teach a standard personal computer bus for transferring the digital audio signal from the digital audio source to the controller.

However, Heyl teaches a standard personal computer bus for transferring the digital audio signal from the digital audio source to the controller (see fig.5 and col.1 lines 17-35, col.6 lines 8-62).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Heyl into the teaching of Cooper and Thagard to provide to handle complex control and routing of numerous sound inputs in a cost effective manner.

9. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cooper (US PAT 5,592,508) as modified by Thagard (US PAT. 6,215,737) as applied to claim 1 above and further in view of Fairchild (US PAT 5,153,592).

Regarding claim 14, Cooper and Thagard do not clearly teach that each of the plurality of audio digital-to-analog converters has an indication of quality.

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However, Fairchild teaches that each of the plurality of audio digital-to-analog converters has an indication of quality (see fig.1, 32,36,38 and col.3 line 14-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Faichild into the teaching of Cooper and Thagard to provide total dynamic performance accuracy and reliability in the digital-to-analog converters.

Regarding claim 15, Cooper and Thagard do not clearly teach that an indication of quality to each of the plurality of digital-to-analog converters; wherein the routing of the digital audio data is based on said to one of the plurality of converters being a closest match to the desired converter quality.

However, Fairchild teaches that an indication of quality to each of the plurality of digital-to-analog converters (see fig.1, 32,36,38 and col.3 line 14-57); wherein the routing (22) of the digital audio data is based on said to one of the plurality of converters being a closest match to the desired converter quality (see col.1 line 59-col.2 line 59).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Faichild into the teaching of Cooper and Thagard to provide total dynamic performance accuracy and reliability in the digital-to-analog converters.

Response to Arguments

10. Applicant's arguments filed with regard to the newly added claims 14-16 on 06-30-2005 have been considered but are moot in view of the new grounds of rejection.

11. Applicant's arguments filed on 06-30-2005 have been fully considered but they are not persuasive.

Regarding applicant's argument that the cited prior art does not teach or suggest a personal computer or method of routing digital audio in a personal computer (see remark page 7 first paragraph). The examiner disagrees. The Cooper teaches the method of routing digital audio to D-A converter (see fig. 4 and col. 4 line 25-col. 5 line 53) and a computer (see col.3 lines 21-41). Therefore, it meets the limitation of the preamble claims 1, 2, 9, 11 and 13 as the claims recited.

Applicant argued that Cooper patent does not teach or suggest routing digital audio signals based on a desired converter quality. The examiner's response is that different formats in Cooper represent different levels of quality in that video signals have higher quality than audio signals because the former have more data bits per packet than the latter. On the other hand, a desired converter quality such as a working converter.

Applicant further argued that the Thazard patent does not use D-A converters having different qualities, or even of different sampling rates, for multiple sources (see remark page 8 first paragraph). The examiner disagrees. As pointed out in the rejection, Thazard discloses selecting different D-A converters based on different sampling rates and different frequency for the various audio channels sources (see figs 3-5 and col.3 line 34-col. 4 line 17 and col. 4 line 18-col. 5 line 20). This can be broadly interpreted as selecting D-A converter based on different quality of signals.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Cooper and Tagard both directed to route the digital audio signals to selected digital-to analog converter. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Tagard into Cooper to provide a multi-channel digital audio having different sampling rate for different d/a converter in order to avoid more data than is necessary and consequently to conserve space on the software carrier to enhance audio reproduction quality.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. The prior art made of record and not relied upon is considered to applicant's disclosure. Nakano (US PAT 5,003,407) discloses an apparatus to configure the standard quality and high quality (see figs. 2-3) to show other related the multiple audio DACs with pc compatibility.

Conclusion

14. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(703) 872-9306

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

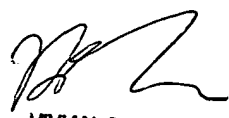
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501

Date 09-10-2005



VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600